food, flavor & nutrition

Harmonizing nature's chemistry by design

ABITEC
AN ABF INGREDIENTS COMPANY

About ABITEC

ABITEC Corporation, a division of ABF Ingredients owned by Associated British Foods (ABF), is a world leader in the development and production of lipids and specialty ingredients. ABITEC derives its products mainly from vegetable sources and combines synthesis and analytical expertise with a high quality manufacturing operation to offer a wide range of exceptional ingredients to our customers.

Our highly trained staff is available to collaborate on your end product requirements involving our existing products or customization to your unique needs.

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Captex®

Medium Chain Triglycerides: Solubilizers, Lubricants

Captex® products can be incorporated into foods targeted to people who are interested in maintaining a balanced body weight and health program but do not wish to compromise on the robust sensory characteristics provided by fats. Snacks, main meals, frozen, and refrigerated foods are all potential applications for medium chain esters.

ABITEC provides many ingredients that conform to the National Formulary and/or the European Pharmacopoeia for use in food applications and nutritional supplements.

Captex® products may function as an important energy source in beverages designed to deliver nutrition to the elderly and young children. They play a similar role in formulas for premature infants.

Medium chain triglycerides and other Captex® or Capmul® excipients have been shown to improve the bioavailability of Coenzyme Q10, Vitamins D, E and other important nutritional supplements when properly formulated. Since Captex® excipients are synthesized from saturated fatty acids, they have low peroxide values and are stable to oxidation. They are highly refined, and as such, have low levels of free glycerol or propylene glycol making them highly compatible with both hard gelatin and soft gelatin capsules.

Did you know...

Captex® Metabolism

One of the most beneficial properties of medium chain triglycerides (MCTs) is their energy-enhancing abilities. MCTs are a special class of esters. Normal fats and oils contain long-chain fatty acids. Compared to these fatty acids, MCTs are much shorter in length, using primarily C8 and C10 fatty acids in the esterification process. As a result, they are more easily absorbed, digested, and utilized as energy than long chain triglycerides (LCTs).

MCTs were initially used as an alternative food source for patients who could not properly digest normal fats and oils. The long chains of LCTs require a lot of bile acids and many digestive steps to be broken down into smaller units that can be absorbed into the bloodstream. Once in the bloodstream, they are absorbed by fat cells and stored as body fat. In contrast, the medium chain triglycerides (MCTs) are more water soluble and are able to enter the bloodstream more quickly because of their shorter lengths. Once in the bloodstream, they are transported directly into the liver. Thus, MCTs are an immediately available source of energy and only a small percent is converted into body fat.

Product	Chemical Name	CFR Reference	Kosher	Halal	Typical Fatty Acid Distribution			
					C-6	C-8	C-10	C-12
Captex® 100	Propylene Glycol Dicaprate	21 CFR 172.856	Yes	Yes	1% Max	5% Max	95% Min	4% Max
Captex® 200	Propylene Glycol Dicaprylate/ Dicaprate	21 CFR 172.856	Yes	Yes	1-5%	60-70%	20-30%	1%
Captex® 300	Caprylic/Capric Triglyceride		Yes	Yes	6% Max	55-80%	15-40%	4% Max
Captex® 355	Caprylic/Capric Triglyceride		Yes	Yes	6% Max	50-75%	22-45%	4% Max
Captex® 500	Triacetin	21 CFR 184.1901	Yes	Yes	100% C-2			
Captex® 1000	Glyceryl Tricaprate		Yes	**	1% Max	5% Max	95% Min	4% Max
Captex® 8000	Glyceryl Tricaprylate		Yes	**	1% Max	90% Min	5% Max	1% Max
Captex® GTO	Glyceryl Trioleate		Yes	**	Greater than 85% C-18:1			
Captex® CA*	Caprylic/Capric Triglyceride (and) Food Starch		Yes	**	Not Available			

Note: Low C-6 chain length versions of some Captex® products are available, please ask your Sales Manager for more information.
*Other substrates for spray drying may be available, please check with your Sales Manager.
**These products can be certified as Halal, please check with your Sales Manager.

Captex® 300 is bland in flavor, virtually odor free, very low in color and contains no trans fats. Unlike most natural oils of vegetable origin, Captex® 300 is very stable and resistant to oxidation. It can be used in infant and geriatric formulations where ease of digestion and a non-allergenic energy source is of primary concern. Captex® 300 may also be used as a moisture barrier or lubricant in dried fruit and baking. In confection formulations it is used as an anti-stick and anti-dusting agent.

Captex® 355 has a higher viscosity and cloud point than Captex® 300 due to its higher C10 content. Its uses are quite similar to Captex® 300, including geriatric, infant and prenatal formulations where ease of digestion and a non-allergenic energy source is a primary concern. It may offer slightly different solubility characteristics than captex 300 with nutritional additives.

Captex® 300 and Captex® 355 function in nutritional foods as a readily available energy source for athletes, bodybuilders, and exercise enthusiasts. They may be incorporated into beverage mixes, energy bars or top-dressed directly onto salads and main dish servings.

Capmul®

Mono- and Diglycerides: Emulsifiers, Food Preservatives

Capmul® products are mono- and diglyceride emulsifiers prepared by glycerolysis of particular fats and oils. They are also prepared by esterification of glycerol or propylene glycol with selected fatty acids. Useful functions of these products include producing stable emulsions and viscosity modification. Capmul® mono- and diglycerides are often found in bakery products, beverages, ice cream, chewing gum, shortening, whipped toppings, margarine, and confections.

ABITEC'S Capmul® MCM excipients function as emulsifiers in oral nutraceutical delivery. There is a growing body of research supporting their use as bioavailability enhancers. They are typically formulated into oral drug delivery systems and have a history of use in gelatin capsules.

Food emulsifiers manufactured by ABITEC provide the functional properties required by today's modern food industry. Innovative technology is essential in the growth and development of processed foods and food systems, ABITEC Corporation reflects this need in its innovative approach to customer service and product development. The range of products produced as mono- and diglycerides are all derived from vegetable origins.

The primary functions of emulsifiers are to:

- Increase volume
- Improve texture
- Provide stability
- Control fat crystallization
- Increase aeration

Did you know...

Emulsifier Overview

The adage that oil and water do not mix is only true in the absence of an emulsifier. The molecular structure of emulsifiers allows oil and water droplets to coexist as a stable homogenous dispersion. Emulsifiers are also known as surface active agents, surfactants, and stabilizers in different food applications.

All emulsions consist of two phases- a dispersed phase and a continuous phase. The two basic emulsion types are oil in water (O/W) and water in oil (W/O). In common notation the first letter is the dispersed phase and the second letter is the continuous phase – thus (W/O) denotes Water as a dispersed phase in Oil, the continuous phase.

Another important emulsifier term is HLB which stands for Hydrophilic/Lipophilic Balance. HLBs are assigned numbers which range from 1 to 20. The more hydrophilic (water loving) the material, the higher the number; the more lipophilic (oil loving), the lower the number.

A common formula used to calculate HLBs is: HLB = 20(1-S/A).

Where: S is the saponification number of the ester and A is the acid number of the acid used.

Product	Chemical Name	CFR Reference	Kosher	Halal	HLB	Primary Emulsifier for O/W or W/O
Capmul® MCM	Glyceryl Caprylate/Caprate	21 CFR 184.1505	Yes	Yes	5-6	W/O
Capmul® MCM C8	Glyceryl Caprylate	21 CFR 184.1505	Yes	**	6-7	W/O
Capmul® 708G	Glyceryl Monocaprylate	21 CFR 184.1505		**	6-7	W/O
Capmul® MCM C10	Glyceryl Caprate	21 CFR 184.1505	Yes	**	5	W/O
Capmul® GMO-50	Glyceryl Monooleate	21 CFR 184.1323 21 CFR 184.1505	Yes	Yes	3-4	W/O
Capmul® GMS-50K	Glyceryl Monostearate	21 CFR 184.1324 21 CFR 184.1505	Yes	**	3-4	W/O
Capmul® PG-12 EP, NF	Propylene Glycol Monolaurate	21 CFR 172.856	Yes	**	4-6	W/O
Capmul® S18L	Sodium Stearoyl Lactylate	21 CFR 172.846		**	7-10	O/W
Capmul® 908P	Propylene Glycol Monocaprylate	21 CFR 172.856	Yes	**	4-5	W/O

** These products can be certified as Halal, please check with your Sales Manager.

Capmul® GMO-50, Glyceryl Monooleate, is used as a lipophilic emulsifier, antifoaming agent, dough strengthener, flavoring agent, lubricant and release agent, stabilizer and thickener, as well as a texturizer in food applications. This multifunctional ingredient can be found in shortenings, whipped toppings, coffee whiteners, frozen desserts and baked goods.

Capmul® GMS-50K, Glyceryl Monostearate, is used as an emulsifier, thickener and anti-caking agent in foods. Capmul® GMS-50K is used in ice cream and whipped cream in part to give the products a smooth texture.

Food Preservation
Capmul® PG-12, Propylene Glycol Monolaurate, and **Capmul® 908P**, Propylene Glycol Monocaprylate, have both been used as food preservatives and food disinfectants. They are both approved as food additives for direct addition to food for human consumption.

Caprol®

Polyglycerol Esters: Emulsifiers, Solubilizers, Multi-Tasking Agents

Caprol® polyglycerol esters (PGEs) are emulsifiers made by the esterification of select polyglycerols with fatty acids or by alcoholysis of a vegetable oil with a polyglycerol. PGE molecular weights vary from low to very high and therefore, form at room temperature can vary from a viscous liquid to a brittle solid. The Caprol® fatty acid moieties can be hydrolyzed from the polymer in the digestive system and then follow the normal fat metabolism model.

A key characteristic differentiating these products is their wide range of HLBs from 2 to 12. By determining the required HLB value of your formulation, one can easily determine the best emulsifier or emulsifier system required.

Some of the key functions of Caprol® polyglycerol esters include:

1. Control of polymorphism and crystal structure of fats to improve consistency and texture
2. Improve the texture of foods by interaction with starch
3. React with proteins (such as gluten) to modify rheological properties
4. Control the agglomeration of fat globules to stabilize aerated systems
5. Provide unique physical properties to foods including lubricity, smooth mouth feel, etc
6. Lower interfacial tension at oil-water boundaries

Caprol® ET is a low HLB emulsifier, often used as a secondary emulsifier in oil in water and a primary emulsifier in water in oil emulsions. Used alone, Caprol® ET is a useful crystallization inhibitor in salad oils. It prevents the formation of stable crystal nuclei from small amounts of stearines in the salad oil; the result is an increase in the time performance of the cold test of oil.

Product	Chemical Name	CFR Reference	Kosher	HLB	Primary Emulsifier for O/W or W/O
Caprol® 3GVS	Triglycerol Monoshortening	21 CFR 172.854	Yes	6-7	W/O
Caprol® MPGO	Mixed Polyglycerol esters	21 CFR 172.854	Yes	7-8	O/W
Caprol® 10G10O	Decaglycerol Decaoleate	21 CFR 172.854	Yes	3-4	W/O
Caprol® PGE 860	Decaglycerol Mono/Dioleate	21 CFR 172.854	Yes	10-12	O/W
Caprol® ET	Polyglycerol ester of mixed fatty acids	21 CFR 172.854	Yes	2-3	W/O

Did you know...

Primary and Secondary Emulsifiers

Although an emulsifier may have an HLB identifying it as a primary O/W emulsifier, this does not mean it cannot be used in W/O formulations. Emulsifier systems often consist of a pairing of emulsifiers combined in the correct ratio, allowing the dispersed phase to coexist in the continuous phase. Usually this pairing consists of a primary emulsifier and a secondary emulsifier. Capmul® MCM is a primary W/O emulsifier due to its HLB, but also may be used as a secondary emulsifier in O/W systems.

Pureco®

Specialty Lipids, High Performance Cooking Oils, Solvents, Carriers

Pureco® oils have various uses as specialty lipids in food applications. These oils can be used as replacement fats, lubricants, and flavor carriers. Pureco® oils also have the ability to be heated to relatively high temperatures without smoking or otherwise breaking down allowing fried foods to brown and cook quickly.

Product	Chemical Name	Regulatory	Form
Pureco® 76	Refined Bleached Deodorized (RBD) Coconut Oil	Specific CFR, Kosher	Semi-solid
Pureco® HSC-1	Partially Hydrogenated Soybean and Cottonseed Oils	Halal, Kosher	Liquid
Clarity	Partially Hydrogenated Soybean Oil with Polyglyceryl Esters of Fatty Acids Added	GRAS, Kosher	Liquid

Did you know...

Flavor Formulating

ABITEC also provides the flavor industry with a toolbox of high melt fats. These fats are essential for seasoning blends and dry powder blends, providing a source or enhancement of 'fatty mouthfeel.' Their narrow melt point ranges help provide control over flavor release, making them a great addition to complex flavors incorporated into salty snacks and side dishes.

Mediun chain triglycerides (MCTs) have a long history of use in the flavor industry for a variety of applications. They perform many functions including acting as a carrier in liquid flavors, as spray dry oils, and as an anti-caking or anti-dusting agent in seasonings and dry powder blends.

Additionally, MCTs can act as a solvent for extracts and oleoresins. Since MCTs are oxidatively stable, they are not affected by processing conditions such as extreme heat and cold. An important feature of medium chain triglycerides is that they are virtually colorless, odorless, and tasteless as solvents for flavors. These properties allow the flavorist to maintain flavor balance among the active chemicals in a formulation ensuring a fresh, authentic sensory experience. In addition to MCTs, other specialty lipids such as Pureco® 76, Pureco® HSC-1, Clarity, and Captex® 500 are widely used as solvents and flavor carriers.

Hydro~Kote® Sterotex®, BBS

High Melt Fats: Bulking Agents, Spreading Agents, Shortenings

ABITEC also has a wide range of products that function as melt point adjusters as well as bulking agents. These products are offered in a wide range of forms varying from prills and flakes to waxy solids. They also make excellent lubricants and processing aids.

Some Hydro~Kote® products are used as replacements for cocoa butter where their texture and narrow melting range characteristics are essential. These products also have a bland flavor and excellent spreadability making them optimum as bulking agents.

Sterotex® fats are used predominantly in the tableting industry as lubricants and processing aids. Sterotex® has been employed as a sustained release aid in tablets by altering the dissolution profile of actives, whether pharmaceutical or nutritional.

Sterotex® products are finely divided powders made from food grade vegetable oils. They are Kosher materials conforming to the National Formulary monograph for hydrogenated oils.

BBS and BBS-C are partially hydrogenated oils that can be used as shortenings and lubricants. These products also help create an even distribution of flavors and consistent texture in batter and dough applications.

Product	Chemical Name	Kosher	Form	Typical Melt Point	
				°F	°C
Hydro~Kote® 112	Hydrogenated Vegetable Oil	Yes	Waxy Flake	109-114	43-46
Hydro~Kote® C	Hydrogenated Cottonseed Oil	Yes	Flakes	132-146	61-63
Hydro~Kote® M	Hydrogenated Vegetable Oil	Yes	Waxy Flake	97-100	36-38
Hydro~Kote® S	Hydrogenated Soybean Oil	Yes	Flakes	153-156	67-69
Sterotex® FL	Hydrogenated Soybean Oil	Yes	Beads	154-158	68-70
Sterotex® HM, NF	Hydrogenated Soybean Oil	Yes	Powder	153-156	67-69
Sterotex® K, NF	Hydrogenated Vegetable Oil	Yes	Powder	178-183	81-84
Sterotex® NF	Hydrogenated Cottonseed Oil	Yes	Powder	140-145	60-63
BBS	Hydrogenated Vegetable Oil	Yes	Soft Solid	109-117	43-47
BBS-C	Hydrogenated Vegetable Oil	Yes	Soft Solid	113-122	45-50

food, flavor & nutrition

With USA production locations in Janesville, Wisconsin and Paris, Illinois and corporate headquarters in Columbus, Ohio, ABITEC's products are designed to achieve the specific functionality our customers require to compete in today's markets.

The ABITEC manufacturing expertise ranges from vegetable oil refining and processing to specialty custom synthesis. In addition to ABITEC's manufacturing capabilities all ABITEC locations have achieved ISO 9001 certification, the globally recognized standard for quality in manufacturing, product development and customer service. Beside ISO 9001, ABITEC uses third party auditors and welcomes customer audits on a regular basis.

ABF ingredients

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ABITEC is an ABF Ingredients Company.
Toll Free: 800.555.1255 info@abiteccorp.com www.abiteccorp.com